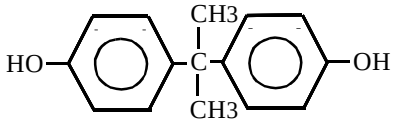
4,4'-ISOPROPYLIDENEDIPHENOL

CAS Registry Number: 80-05-7

Molecular Formula: $C_{15}H_{16}O_2$



4,4'-Isopropylidenediphenol appears as white or tan crystals or flakes and has a mild phenolic odor. It is insoluble in water, soluble in aqueous alkaline solutions, alcohol and acetone, and is slightly soluble in carbon tetrachloride. 4,4'-Isopropylidenediphenol emits acrid and irritating fumes when it is heated to decomposition (Merck, 1989; Sax, 1989).

Physical Properties of 4,4'-Isopropylidenediphenol

Synonyms: bisphenol-A; 2,2-(4,4-dihydroxydiphenyl)propane

Molecular Weight:	228.28
Boiling Point:	220 °C at 4 mm Hg
Melting Point:	150 - 155 °C
Vapor Pressure:	4.0×10^{-8} mm Hg at 25 °C
Log Octanol/Water Partition Coefficient:	3.32
Conversion Factor:	1 ppm = 9.34 mg/m^3

(Howard, 1990; Merck, 1989)

SOURCES AND EMISSIONS

A. Sources

4,4'-Isopropylidenediphenol is used in the manufacture of epoxy, polycarbonate, and polysulfone resins. It is also a thermal degradation product of epoxy resin and powder paint used to paint metal objects. 4,4'-Isopropylidenediphenol is also used as a flame retardant and in rubber chemicals (HSDB, 1993).

The primary stationary sources that have reported emissions of 4,4'-isopropylidenediphenol in California are manufacturers of electronic components and accessories, guided missiles and space vehicles, and metalworking machinery (ARB, 1997b).

B. Emissions

The total emissions of 4,4'-isopropylidenediphenol from stationary sources in California are estimated to be at least 35 pounds per year, based on data reported under the Air Toxics "Hot Spots" Program (AB 2588) (ARB, 1997b).

C. Natural Occurrence

No information about the natural occurrence of 4,4'-isopropylidenediphenol was found in the readily-available literature.

AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient measurements of 4,4'-isopropylidenediphenol.

INDOOR SOURCES AND CONCENTRATIONS

No information about indoor sources and concentrations of 4,4'-isopropylidenediphenol was found in the readily-available literature.

ATMOSPHERIC PERSISTENCE

4,4'-isopropylidenediphenol will exist mainly in the particulate phase in the atmosphere, and hence be subject to wet and dry deposition. The average half-life and lifetime for particles in the troposphere is estimated to be about 3.5 to 10 days and 5 to 15 days, respectively (Balkanski et al., 1993; Atkinson, 1995). Gaseous 4,4'-isopropylidenediphenol will react with the hydroxyl radical, with a calculated half-life and lifetime of about 3 hours and 4 hours, respectively (Atkinson, 1995).

AB 2588 RISK ASSESSMENT INFORMATION

4,4'-Isopropylidenediphenol emissions are not reported from stationary sources in California under the AB 2588 program. It is also not listed in the California Air Pollution Control Officers Association Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines as having health values (cancer or non-cancer) for use in risk assessments (CAPCOA, 1993).

HEALTH EFFECTS

Probable routes of human exposure to 4,4'-isopropylidenediphenol are inhalation, ingestion, and dermal contact.

Non-Cancer: 4,4'-Isopropylidinediphenol (bisphenol A) is a mild irritant to the mucous membranes of the eyes, nose, and throat. There are no chronic animal inhalation studies using

4,4'-isopropylidenediphenol (U.S. EPA, 1995a).

The United States Environmental Protection Agency (U.S. EPA) has calculated an oral Reference Dose (RfD) for 4,4'-isopropylidenediphenol of 50 micrograms per kilogram per day based on reduced body weights in male rats fed diets containing 4,4'-isopropylidinediphenol throughout their lifetime. The RfD is designed to protect against adverse effects from daily oral exposure over the course of a lifetime (U.S. EPA, 1995a).

Cancer: 4,4'-Isopropylidinediphenol has not been evaluated for carcinogenicity by the U.S. EPA or the International Agency for Research on Cancer (U.S. EPA, 1995a).